

Translated from the German

Federal Republic of Germany  
German Patent Office

Offenlegungsschrift  
DE 35 01 364 A1

IPC: A 47 B 91/02  
F 24 C 15/08  
A 47 L 15/42

Date of application: January 17, 1985

Date the unexamined 'Offenlegungsschrift', on which no grant has taken place on or before the said date, has been made available to the public by printing:  
July 17, 1986

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Applicant: Licentia- Patent-Verwaltung G.m.b.H.

Inventor: Karl Meyer, D-8437 Freystadt

Title in German of the object of the invention: Haushaltgerät mit einem höhenverstellbaren Standfuß

HOUSEHOLD APPLIANCE, HAVING A VERTICALLY ADJUSTABLE FOOT

Patent Claims

1. Household appliance, having a vertically adjustable foot, which is screwed in a guide body - having variable safeguarding or locking - clamped in a receiving opening in the housing base of the appliance, characterized by the following features,

- the guide body(5) is designed as stamping (punching) nut (6), riveting nut, or weld nut (6').

- a retaining (guard) ring (7), consisting of plastic, is integrated in the guide body (5),

- the guide body (5) with the retaining ring (7) is rigid component of the housing's base (4).

2. Household appliance, as claimed in claim 1, characterized in that the punching nut (6) has a step-like shoulder (8) gripping through the receiving opening (3) in the housing's base (4), and projecting out beyond the receiving opening (3), which shoulder (8) - as a result of corresponding transformation, respectively deformation, forms a retaining-flange edge (9), gripping behind the edge of the receiving opening (3).

3 Household appliance, as claimed in claim 1, characterized in that the retaining ring (7), integrated in the guide body (5), is made of a high-temperature resistant plastic.

4. Household appliance, as claimed in claim 1, characterized in that the guide body (5) in its capacity as riveting nut (5) is pressed, respectively clamped with the housing's base (4).

5. Household appliance, as claimed in claim 1, characterized in that the guide body

(5) [is designed as] (weld nut 6'), and attached in the receiving opening (3) of the housing's base (4) by means of welding.

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The invention pertains to a household appliance. Having a vertically adjustable [upright] foot, pursuant to the preamble of patent claim 1.

A household device, having a vertically adjustable foot is known from DE-OS 29 29 222. In that household device, the foot is screwed in a guide body of plastic, provided with an inner thread, which guide body is introduced in a receiving opening in the housing's base of the household appliance, and is attached on it in a way resembling a bayonet lock or slide-type spring lock. TO this end, a multiple number of recesses in the form of circular rings, which are staggered with respect to one another, are mounted in the edge area, and on the plastic guide-body, there are integrally molded at various heights a multiple number of centering- and detent projections. After the insertion of the plastic guide-body into the receiving opening, and the subsequent twisting of the guide body with respect to housing's base, the projections form - together with the base -

the bayonet lock. In order for an autonomous, respectively involuntary motion of the foot, which is screwed in the guide body, to be precluded, its inner-thread diameter on the end of the thread is designed as being narrower with respect to the diameter of the beginning of the thread. However, as far as manufacturing and installation are concerned, this upright foot arrangement is relatively expensive, because - on the one hand - the special design of the guide body presupposes an intricate manufacturing tool for the guide body, and - on the other hand - the receiving openings in the housing's base should be punched out in a separate step, and the guide body/bodies can be introduced into the receiving openings only in yet another additional step.

The objective to reduce the manufacturing costs for the guide body of the adjustable foot, and - in doing so - to concurrently achieve an automation of the guiding body's installation forms the basis of the invention.

The achievement of the objective, set in accordance with the invention, is to be deduced from the characteristic part of patent claim 1.

Functionally, additional embodiments of the object of the invention are cited in the subclaims.

As a result of the invention, an upright-foot arrangement is created, having a particularly simple structural design, which foot can be installed in a fully

automated way, and, contributes - when mass production takes place - to a considerable reduction of the manufacturing costs.

An exemplified embodiment of the invention is diagrammatically represented in the drawing, and is described in greater detail by means of it, wherein

Fig. 1 shows the housing of a household appliance, having vertically adjustable upright feet,

Fig. 2a and Fig. 2b shows on an enlarged scale a guide body for the foot, which guide body is clamped in the housing's base, resp. in the body frame,

Fig. 3 shows - also on an enlarged scale - a foot, introduced in the guide body.

The housing or casing of a household appliance (washing machine, an integrated washer/drier, a dish-washing machine, or similar) is denoted by 1, which household device has four vertically adjustable feet 2, of which subsequently a foot is described in greater detail. Each of the four feet are screwed in a guide body 5, which is clamped or supported in a receiving opening 3, formed in the housing's base 4 (housing frame). Functionally, the guide body 5 is designed as punching (stamping) nut 6, in which a retention ring 8, consisting of plastic, is integrated. In doing so, the stamping nut 6 and the integrated retention ring 7 form a compact,

monolithic installation part for an automated installation. A high-temperature resistant (up to 230° C) plastic is used as material for the retention ring 7. Therewith, it is guaranteed that the retention ring 7 does not sustain any damages when the lacquered housing 1 passes through a drying oven, after the guide body 5 has been installed. The stamping nut 6 (guide body 5) has a step-like shoulder 8, grasping through the receiving opening 3 and protruding beyond the receiving opening 3, which shoulder 8 - in that case - by means of corresponding transformation, respectively deformation, forms a retaining flange 9, grasping behind the edge of the receiving opening 3.

Without other installation preparations, the guide body 5 can now be introduced - in a single operation - into the housing's base, respectively housing frame, consisting of metal sheet. To this end, the guide body 5 is designed as so-called stamping nut 6, which stamps out the housing's base 4 as a result of a pressing operation, and, therewith, generates on its own its receiving opening 3.

As a result of an additional operation of the pressing tool, the step-like shoulder 8, protruding out of the receiving opening 3 is transformed in such a way that the retaining flange 9 - gripping behind the edge of the receiving opening 3 - is formed, by means of which retaining flange the stamping nut 6 is pressed (squeezed) with the housing's base 4, and, therewith, is a rigid component of the

housing's base 4. The guide body 5 can also be designed as a riveting nut. However, in doing so, it is necessary that the receiving opening 3 in the housing's base is stamped out in a separate process-step.

The design of the guide body 5 as weld nut 6' is also envisaged as advantageous (Fig. 2a0. In that case, the weld nut 6' with its retaining flange 9' is welded to the housing's base 4.

The plastic retaining (guard) ring 7, integrated in the guide body 5, is sued for self-locking of the introduced foot 2 when the housing's base 1 is subjected to dynamic loading. With the screwing-in of the foot 2 - that can be vertically adjusted in a conventional way - into the guide body 5, there occurs a certain bracing of the screw-in foot 2 with the plastic retention ring 7, i.e. a thread is practically formed in the plastic retention ring by means of the screw-in foot 2. The clamping forces, originating between thread profiles of the screw-in foot 2 and the retention ring 7, produce - as a result of the high force-closure (frictional connection - the prevailing torque or securing moment for the screwed - in foot 2, and, therewith, prevent an autonomous displacement oft he screwed-in foot when the hosing 1 vibrates. The plastic retention ring 7 has the advantage that when the foot 2 is screwed in, its protective coating - preventing the formation of rust - is not damaged.

Translated by John Koytcheff, M.Sc. Eng.  
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US Department of Commerce/PTO/STIC  
January 31, 2008

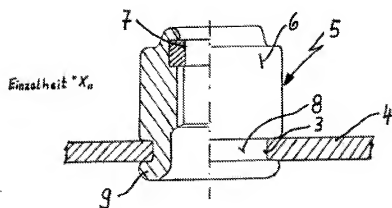
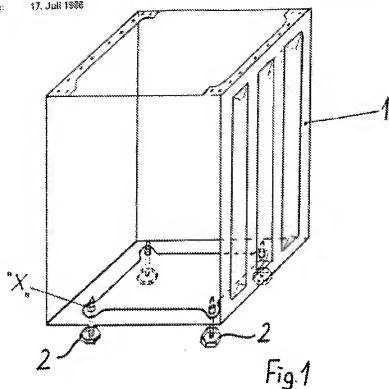


Nummer:  
Int. Cl. 4:  
Anmeldetag:  
Offenlegungstag:

35 01 364  
A 47 B 91/02  
17. Januar 1986  
17. Juli 1986

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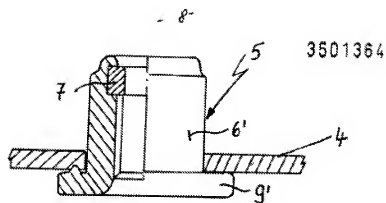


Fig. 2 b

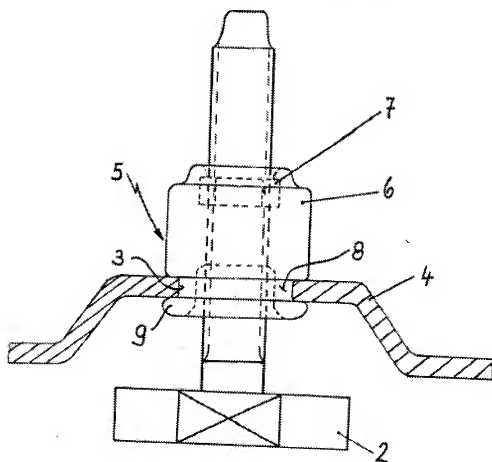


Fig. 3

